MPE REPORT

Power Bank Magsafe Wireless Charger

MODEL No.: LS1

FCC ID: 2AODN-LS1

REPORT NO.: NCT23042163E-2

ISSUE DATE: Oct. 25, 2023

Prepared for

CYSPO Technology (Shenzhen) Co., LTD.

10/F, Building B, Chaxi Sanwei Second IndustrialZone, Sanwei Community, HangchengShenzhen, 518000 China

Prepared by

Shenzhen NCT Testing Technology Co., Ltd.

A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District, Shenzhen, People's Republic of China

TEL: 400-8868-419

FAX: 86-755-27790922

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TEST REPORT DESCRIPTION

Applicant	:	CYSPO Technology (Shenzhen) Co., LTD.
Address	:	10/F, Building B, Chaxi Sanwei Second IndustrialZone, Sanwei Community, HangchengShenzhen, 518000 China
Manufacturer	:	CYSPO Technology (Shenzhen) Co., LTD.
Address	:	10/F, Building B, Chaxi Sanwei Second IndustrialZone, Sanwei Community, HangchengShenzhen, 518000 China
EUT	:	Power Bank Magsafe Wireless Charger
Model Name	:	LS1
Trademark	:	N/A

Measurement Procedure Used:

FCC Part 1(1.1310) and Part 2(2.1091)
680106 D01 RF Exposure Wireless Charging App v03

The device described above is tested by Shenzhen NCT Testing Technology Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen NCT Testing Technology Co., Ltd. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen NCT Testing Technology Co., Ltd.

Test Engineer:

Keven Wu / Engineer

Technical Manager:

Henry Wang / Manager

1. SUMMARY OF TEST RESULT

EMISSION		
Description of Test Item	Standard & Limits	Results
MPE	FCC Part 1(1.1310) and Part 2(2.1091) 680106 D01 RF Exposure Wireless Charging App v03	Pass
Note: N/A is an abbreviation for Not Applicable.		

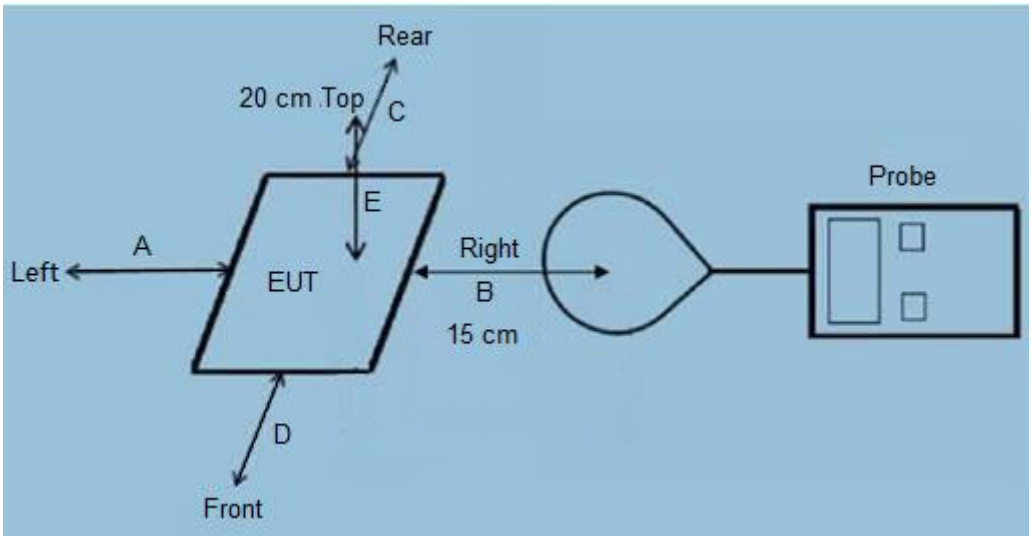
2. GENERAL INFORMATION

2.1. Description of Device (EUT)

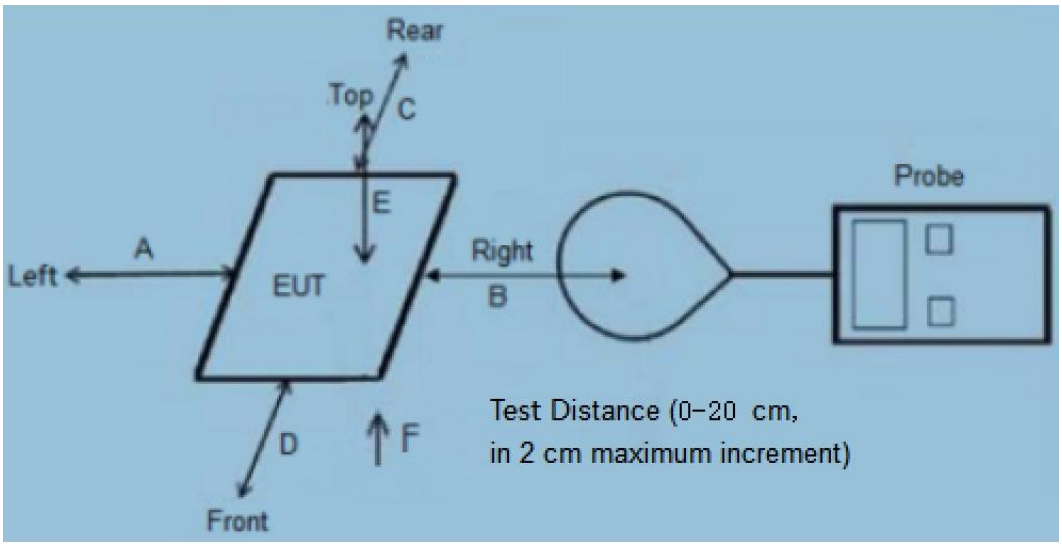
EUT	:	Power Bank Magsafe Wireless Charger
Model Number	:	LS1
Power Rating	:	Rated Capacity: 3100mAh(5V/2A) Battery Capacity: 5000mAh Type-C Input: 5V/3A, 9V/2A Type-C Output: 5V/2A Wireless Charging Output : 15W
Operation Frequency for WPT	:	110-205KHz
Modulation	:	MSK
Antenna Type:	:	Coil Antenna
Date of Received	:	Oct. 16, 2023
Date of Test	:	Oct. 16, 2023 to Oct. 25, 2023

2.2. Test Setup

For Mobile exposure conditions



For portable exposure conditions



2.3. Description of Test Facility

Site Description

EMC Lab. : Accredited by CNAS, 2022-09-27
The certificate is valid until 2028.01.07
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2017)
The Certificate Registration Number is L8251

Designation Number: CN1347
Test Firm Registration Number: 894804
Accredited by A2LA, June 14, 2023
The Certificate Registration Number is 6837.01

Accredited by Industry Canada, November 09, 2018
The Conformity Assessment Body Identifier is CN0150
Company Number: 30806

Name of Firm : Shenzhen NCT Testing Technology Co., Ltd.
Site Location : A101&2F B2, Fuqiao 6th Area, Xintian Community, Fuhai Street, Baoan District, Shenzhen, People's Republic of China

2.4. Measurement Uncertainty

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For MPE Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☼	Exposure Level Tester(1Hz-400KHz)	Narda	EHP-200A	180ZX00634	2023.06.21	2024.06.20

4. RF EXPOSURE

4.1. Measuring Standard

FCC Part 1(1.1310) and Part 2(2.1091)

4.2. Requiments

Three different categories of transmitters are defined by the FCC in OET Bulletin 65. These categories are fixed installation, mobile, and portable and are defined as follows: o Fixed Installations: fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans from the antenna is maintained to at least 2 meters. o Mobile Devices: a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located, such as a wireless modem operating in a laptop computer, are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR §2.1091. o Portable Devices: a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR§2.1093). The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/ Controlled Exposure and General Population/Uncontrolled Exposure. These two categories are defined as follows: Occupational/Controlled Exposure: In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks. General Population/Uncontrolled Exposure: The general population / uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

4.3. Test configuration

For Mobile exposure conditions

1) The RF exposure test was performed on 360 degree turn table in anechoic chamber.
2) The measurement probe was placed at test distance (15cm for A,B,C,D four sides and 20cm for E Top) which is between the edge of the charger and the geometric center of probe.
3) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
4) The EUT were measured according to the dictates of 680106 D01 RF Exposure Wireless Charging Apps v03r01

For portable exposure conditions

5) The RF exposure test was performed on 360 degree turn table in anechoic chamber.
6) he measurement probe was placed at test distance (0-20 cm,in 2 cm maximum increment) which is between the edge of the charger and the geometric center of probe.
7) The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E, F) were completed.
8) The EUT were measured according to the dictates of 680106 D01 RF Exposure Wireless Charging Apps v03r01

4.4. Equipment Approval Considerations

Requirement for KDB Publication 680106 D01

Condition Requirement	Yes / No	Answers
Power transfer frequency is less than 1 MHz.	Yes	The power transfer frequency is 110-205KHz.
Output power from each primary coil is less than or equal to 15 watts.	Yes	Output power is 15W Max.
The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.	Yes	The transfer system includes only single primary.
Client device is placed directly in contact with the transmitter.	Yes	Client device is placed directly in contact with the transmitter.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	No	Mobile exposure conditions and portable exposure conditions
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.	Yes	Please refer to the result of Electric Field Emissions and Magnetic Field Emissions.

4.5. Limits

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f²	6
30-300	61.4	0.163	1.0	6
300-1,500	/	/	f/300	6
1,500-100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f²	30
30-300	27.5	0.073	0.2	30
300-1,500	/	/	f/1500	30
1,500-100,000	/	/	1.0	30

F=frequency in MHz
*=Plane-wave equivalent power density

According to FCC 680106 D01 RF Exposure Wireless Charging Apps v03r01 Section 3. RF Exposure Requirements clause 3 the Emission-Limits in the frequency range from 100 KHz to 300 KHz should be assessed versus the limits at 300 KHz in Table 1 of CFR 47 – Section1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

	E-Field	*/*	B-Field
Frequency	V/m	A/m	uT
0.3 MHz – 3.0 MHz	614	1.613	2.0
3.0 MHz – 30 MHz	824/f (=27.5_{30MHz})	2.19/f (=0.073_{30MHz})	--

A KDB inquire was required to determine/confirm the applicable limits below 100 KHz.

Test Mode	Description	Remark
Discharging	Full Load	With Phone
	Half Load	With Phone
	No Load	With Phone

4.6. Measuring Results

For Mobile exposure conditions

Test Mode: Mode 1(Full Load)

Electric Field Emissions			
Test Position	Measure Value (V/m)	Limit(V/m)	Distance(cm)
Top	3.12	614	20
Left	2.36	614	15
Right	3.19	614	15
Rear	3.27	614	15
Front	2.62	614	15
Magnetic Field Emissions			
Test Position	Measure Value (A/m)	Limit(A/m)	Distance(cm)
Top	0.0134	1.63	20
Left	0.0368	1.63	15
Right	0.0174	1.63	15
Rear	0.0096	1.63	15
Front	0.0075	1.63	15

Test Mode: Mode 1(Half Load)

Electric Field Emissions			
Test Position	Measure Value (V/m)	Limit(V/m)	Distance(cm)
Top	2.98	614	20
Left	2.15	614	15
Right	2.23	614	15
Rear	2.05	614	15
Front	2.71	614	15
Magnetic Field Emissions			
Test Position	Measure Value (A/m)	Limit(A/m)	Distance(cm)
Top	0.0124	1.63	20
Left	0.0221	1.63	15
Right	0.0134	1.63	15
Rear	0.0085	1.63	15
Front	0.0063	1.63	15

Test Mode: Mode 1(No Load)

Electric Field Emissions			
Test Position	Measure Value (V/m)	Limit(V/m)	Distance(cm)
Top	1.07	614	20
Left	1.26	614	15
Right	1.15	614	15
Rear	1.13	614	15
Front	1.24	614	15
Magnetic Field Emissions			
Test Position	Measure Value (A/m)	Limit(A/m)	Distance(cm)
Top	0.0101	1.63	20
Left	0.0113	1.63	15
Right	0.0041	1.63	15
Rear	0.0069	1.63	15
Front	0.0078	1.63	15

For portable exposure conditions

Mode	measuring distance (cm)	Measured H-Field Strength Values (A/m)						FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F		
No Load	0	0.519	0.486	0.534	0.479	0.604	0.581	0.815	1.63
Half Load	0	0.459	0.512	0.601	0.637	0.636	0.489	0.815	1.63
Full Load	0	0.632	0.647	0.492	0.489	0.570	0.535	0.815	1.63
No Load	2	0.570	0.644	0.552	0.615	0.540	0.503	0.815	1.63
Half Load	2	0.636	0.507	0.605	0.463	0.647	0.533	0.815	1.63
Full Load	2	0.599	0.466	0.646	0.490	0.454	0.462	0.815	1.63
No Load	4	0.526	0.522	0.485	0.647	0.512	0.620	0.815	1.63
Half Load	4	0.612	0.602	0.480	0.540	0.463	0.627	0.815	1.63
Full Load	4	0.514	0.593	0.563	0.596	0.532	0.581	0.815	1.63
No Load	6	0.623	0.558	0.624	0.553	0.501	0.588	0.815	1.63
Half Load	6	0.480	0.543	0.456	0.474	0.469	0.642	0.815	1.63
Full Load	6	0.589	0.555	0.599	0.480	0.598	0.492	0.815	1.63
No Load	8	0.397	0.363	0.436	0.359	0.379	0.376	0.815	1.63
Half Load	8	0.403	0.412	0.420	0.426	0.436	0.431	0.815	1.63
Full Load	8	0.415	0.447	0.382	0.366	0.436	0.423	0.815	1.63

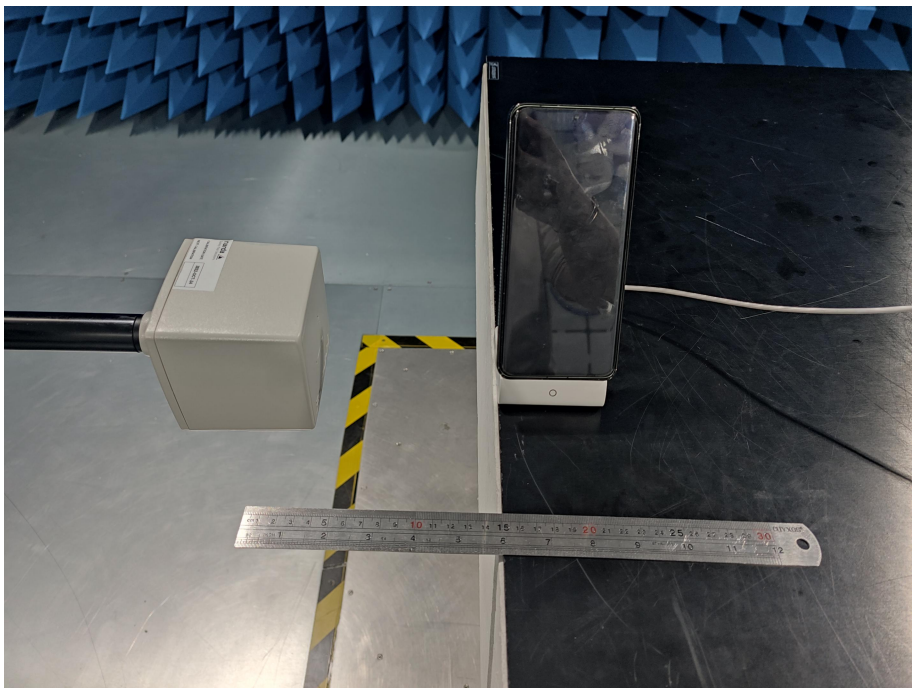
Mode	measuring distance (cm)	Measured H-Field Strength Values (A/m)						FCC E-Field Strength 50% Limits (A/m)	FCC E-Field Strength Limits (A/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F		
No Load	10	0.392	0.437	0.447	0.385	0.438	0.430	0.815	1.63
Half Load	10	0.365	0.438	0.356	0.408	0.436	0.443	0.815	1.63
Full Load	10	0.358	0.391	0.364	0.357	0.419	0.373	0.815	1.63
No Load	12	0.405	0.396	0.439	0.424	0.429	0.374	0.815	1.63
Half Load	12	0.358	0.408	0.365	0.416	0.440	0.435	0.815	1.63
Full Load	12	0.355	0.423	0.376	0.449	0.438	0.389	0.815	1.63
No Load	14	0.319	0.348	0.318	0.325	0.269	0.318	0.815	1.63
Half Load	14	0.338	0.271	0.270	0.255	0.284	0.273	0.815	1.63
Full Load	14	0.338	0.282	0.310	0.298	0.257	0.345	0.815	1.63
No Load	16	0.278	0.312	0.253	0.281	0.313	0.323	0.815	1.63
Half Load	16	0.262	0.272	0.266	0.285	0.263	0.258	0.815	1.63
Full Load	16	0.315	0.317	0.274	0.275	0.304	0.304	0.815	1.63
No Load	18	0.246	0.193	0.194	0.244	0.184	0.221	0.815	1.63
Half Load	18	0.228	0.217	0.207	0.230	0.230	0.152	0.815	1.63
Full Load	18	0.197	0.179	0.188	0.207	0.182	0.209	0.815	1.63
No Load	20	0.219	0.161	0.229	0.230	0.220	0.235	0.815	1.63
Half Load	20	0.162	0.171	0.214	0.151	0.250	0.176	0.815	1.63
Full Load	20	0.244	0.166	0.184	0.154	0.218	0.183	0.815	1.63

Mode	measuring distance (cm)	Measured E-Field Strength Values (V/m)						FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F		
No Load	0	178	186	193	198	173	174	307	614
Half Load	0	196	183	174	194	174	173	307	614
Full Load	0	184	182	173	185	182	194	307	614
No Load	2	197	176	180	189	183	182	307	614
Half Load	2	180	180	181	182	186	195	307	614
Full Load	2	197	179	195	195	189	182	307	614
No Load	4	176	178	178	188	185	196	307	614
Half Load	4	171	171	172	172	170	193	307	614
Full Load	4	190	189	198	178	184	186	307	614
No Load	6	173	190	178	196	177	179	307	614
Half Load	6	197	199	179	192	172	177	307	614
Full Load	6	189	172	185	191	185	194	307	614
No Load	8	161	155	169	161	158	155	307	614
Half Load	8	150	154	164	166	158	159	307	614
Full Load	8	165	153	167	157	166	158	307	614

Mode	measuring distance (cm)	Measured E-Field Strength Values (V/m)						FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E	Test Position F		
No Load	10	159	167	167	154	154	156	307	614
Half Load	10	153	167	156	165	162	167	307	614
Full Load	10	169	168	152	154	163	170	307	614
No Load	12	163	156	152	156	154	151	307	614
Half Load	12	169	162	165	168	156	157	307	614
Full Load	12	158	163	156	156	160	152	307	614
No Load	14	131	139	143	148	141	130	307	614
Half Load	14	131	146	137	138	141	136	307	614
Full Load	14	145	142	138	139	132	131	307	614
No Load	16	131	141	133	133	142	149	307	614
Half Load	16	142	144	147	140	130	150	307	614
Full Load	16	145	133	136	150	145	149	307	614
No Load	18	120	117	118	117	125	121	307	614
Half Load	18	127	120	102	110	119	102	307	614
Full Load	18	106	128	126	120	107	123	307	614
No Load	20	107	113	125	103	123	121	307	614
Half Load	20	107	101	104	111	111	117	307	614
Full Load	20	103	115	110	109	119	108	307	614

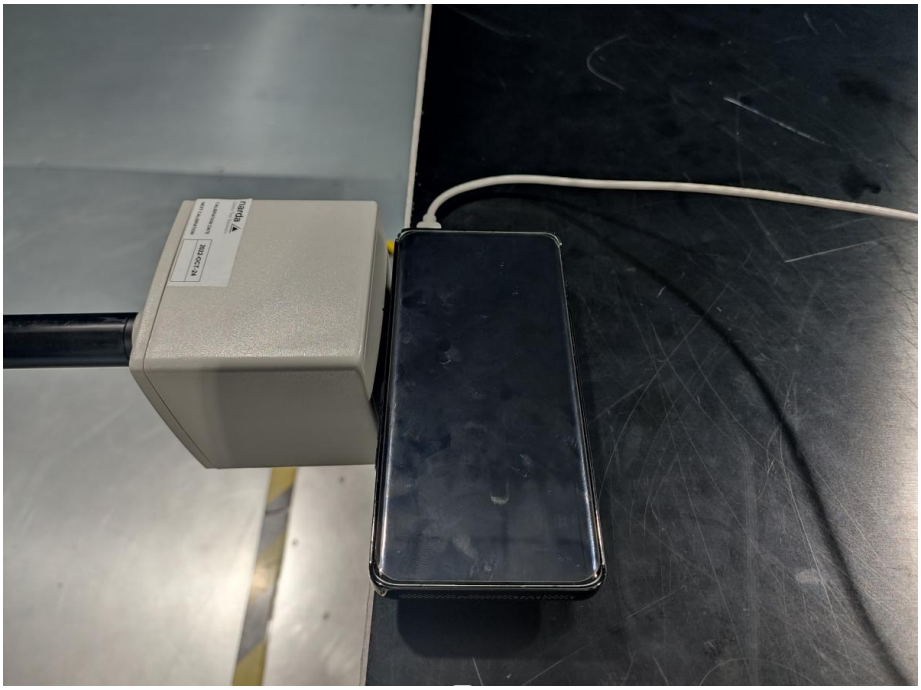
5. PHOTOGRAPHS OF TEST SETUP

For Mobile exposure conditions

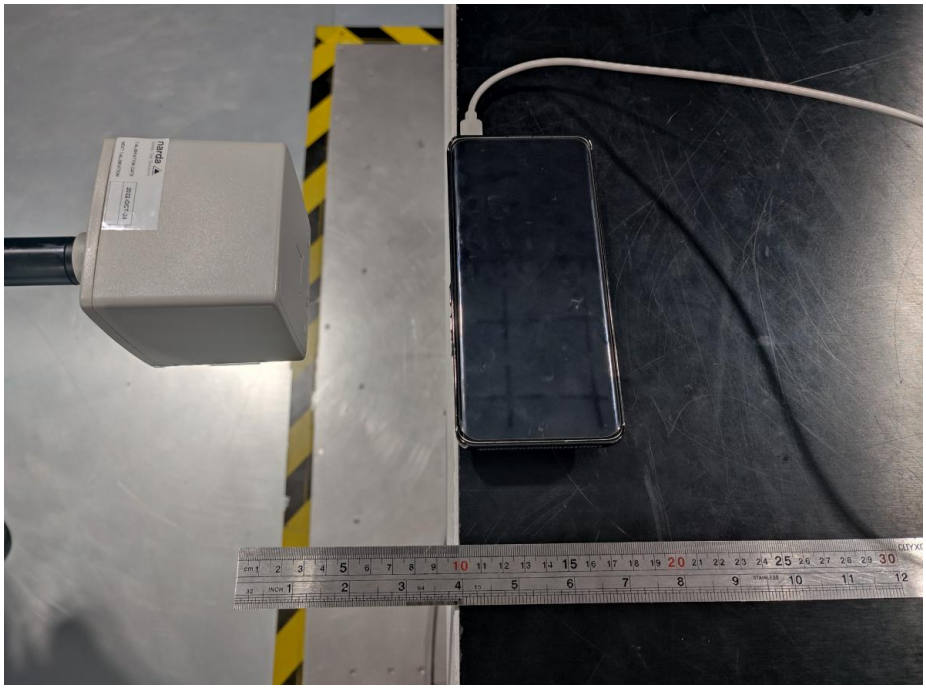


For portable exposure conditions

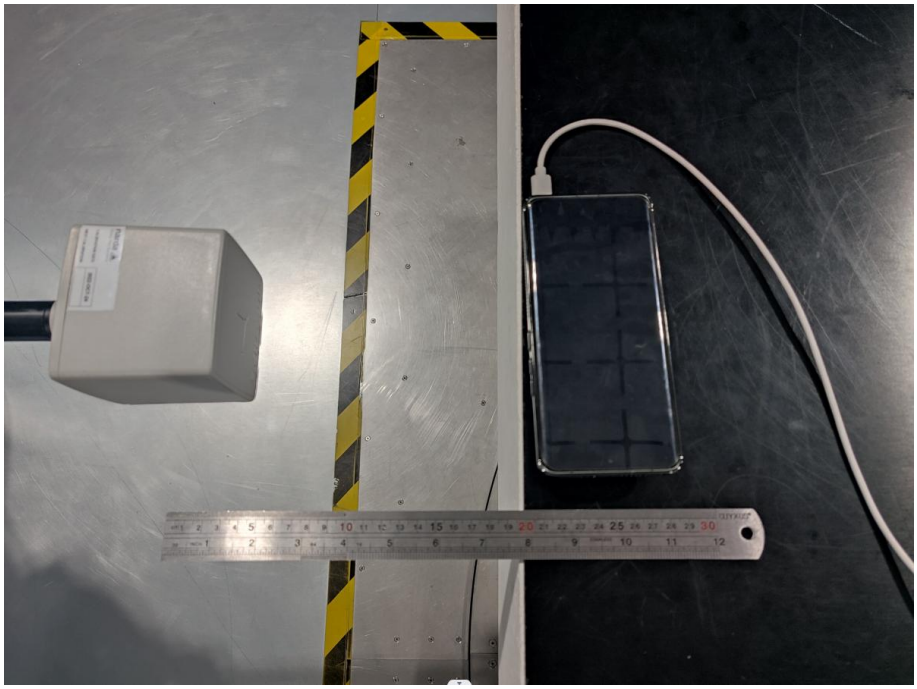
Test Position A（0cm）



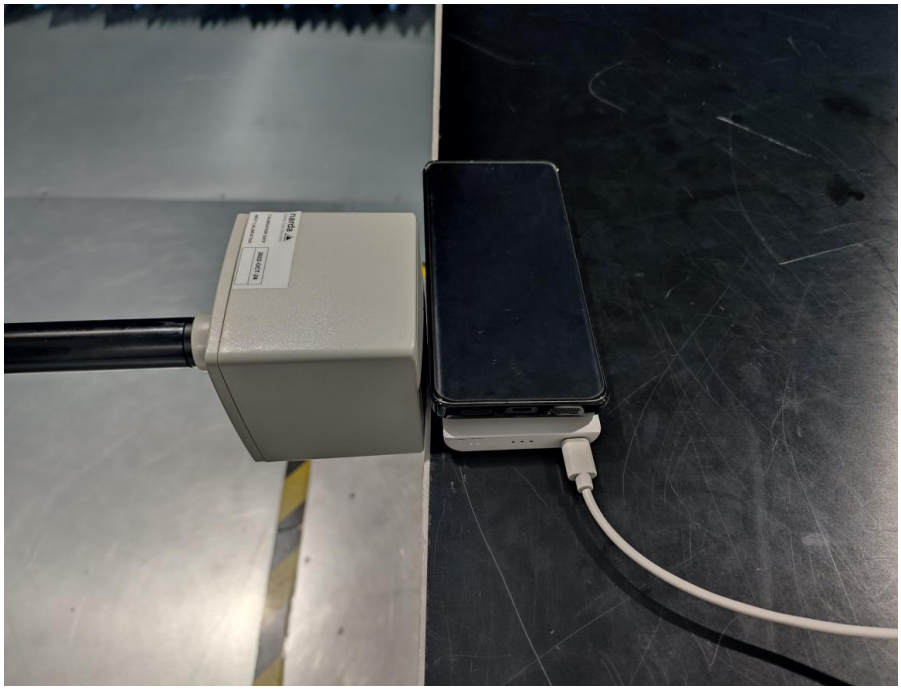
Test Position A（10cm）



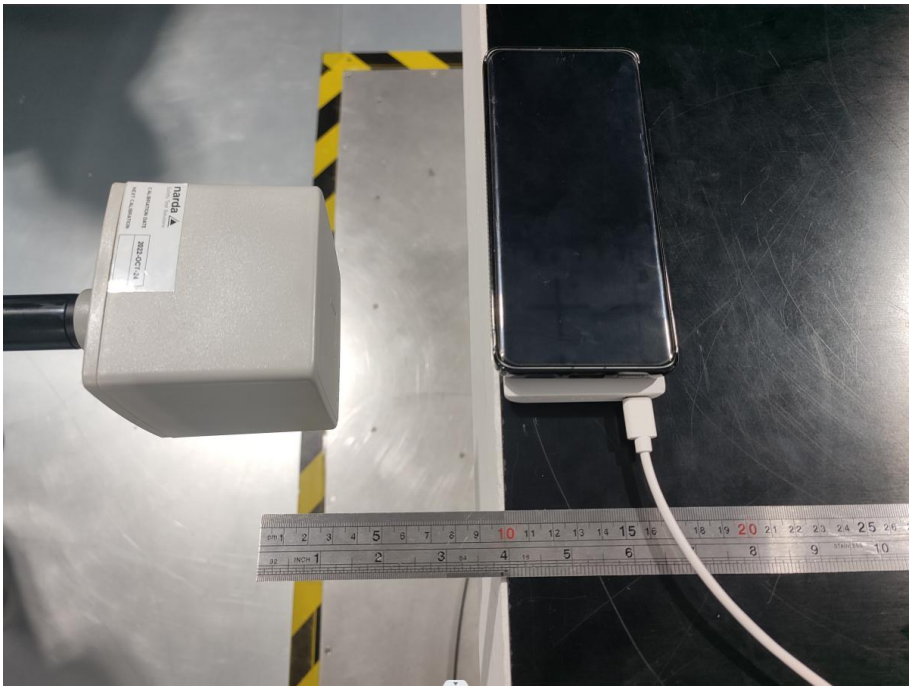
Test Position A（20cm）



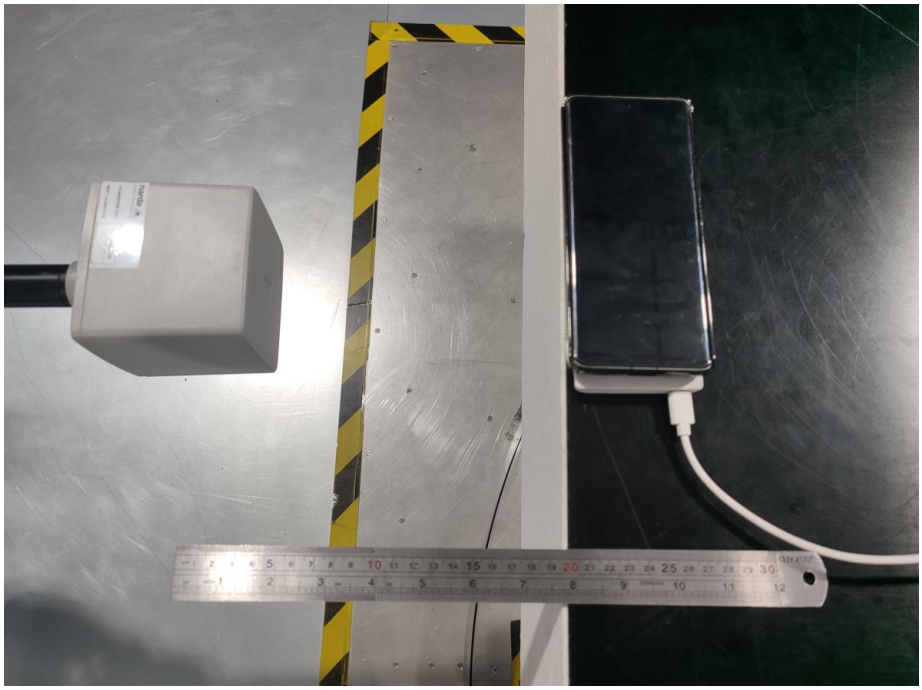
Test Position B（0cm）



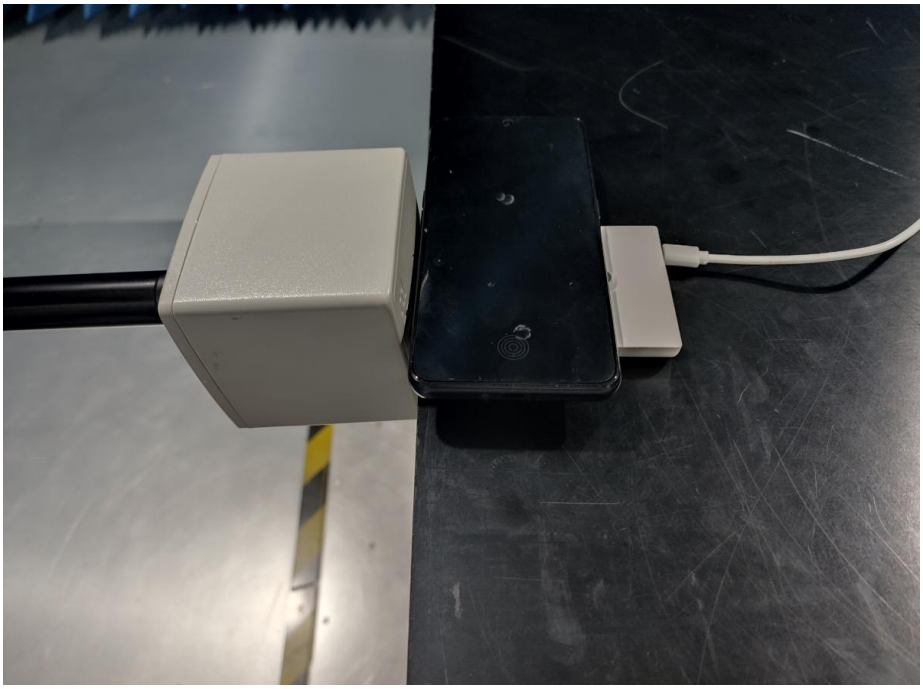
Test Position B（10cm）



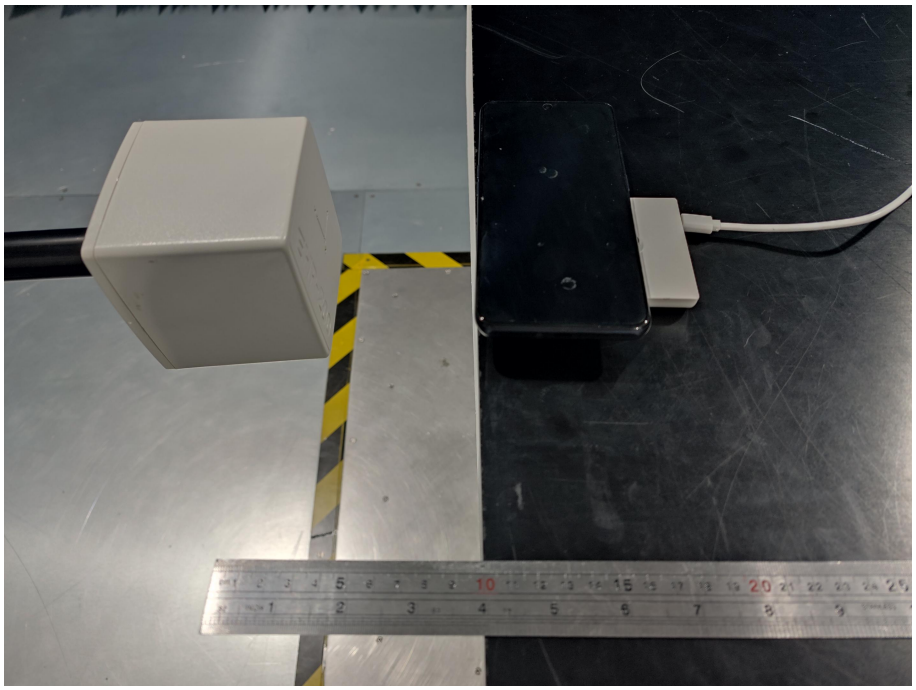
Test Position B（20cm）



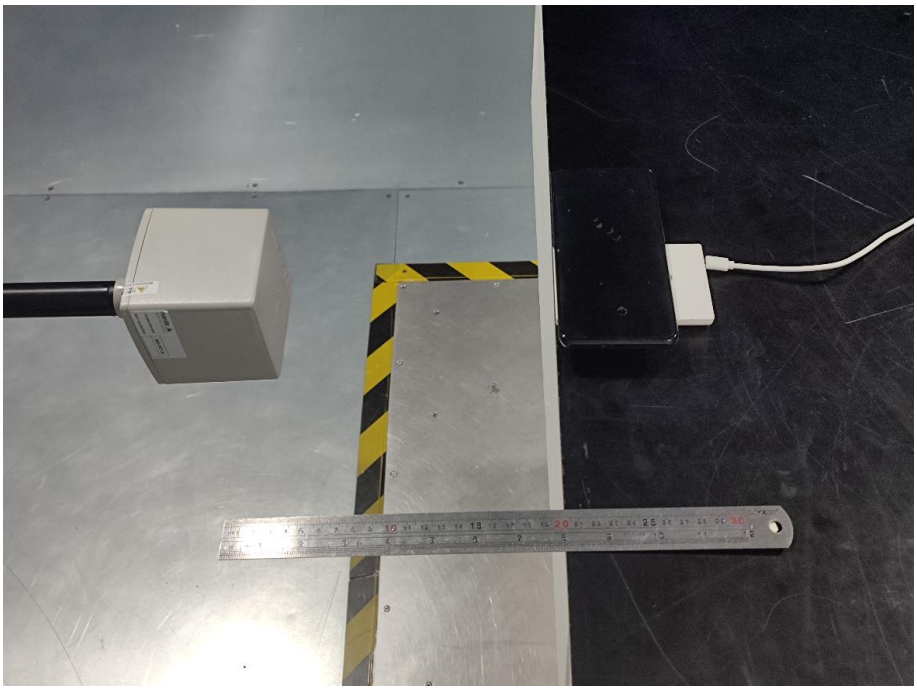
Test Position C（0cm）



Test Position C（10cm）

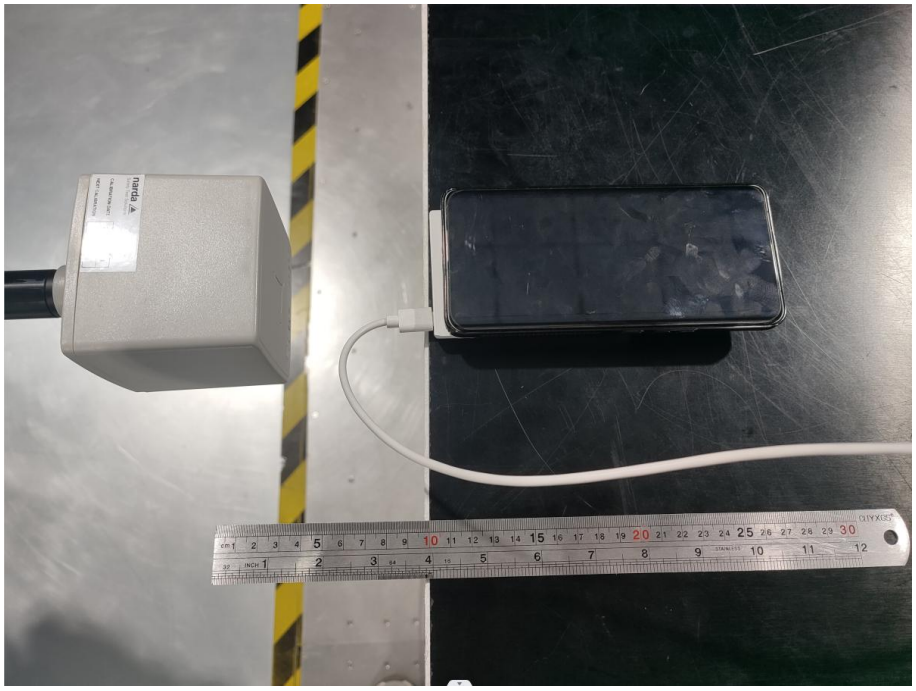


Test Position C（20cm）

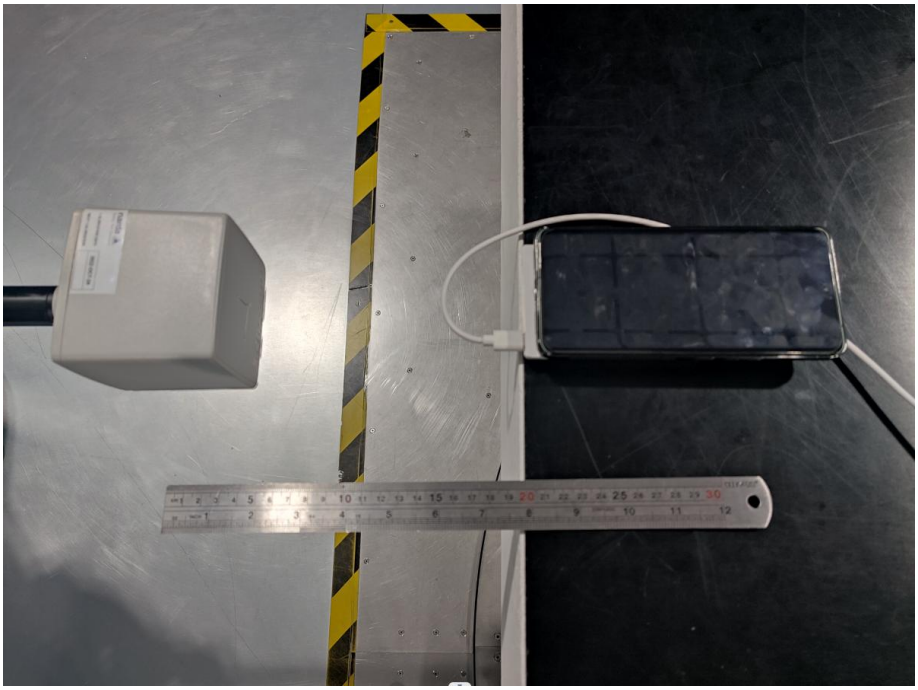


Test Position D（0cm）

Test Position D（10cm）

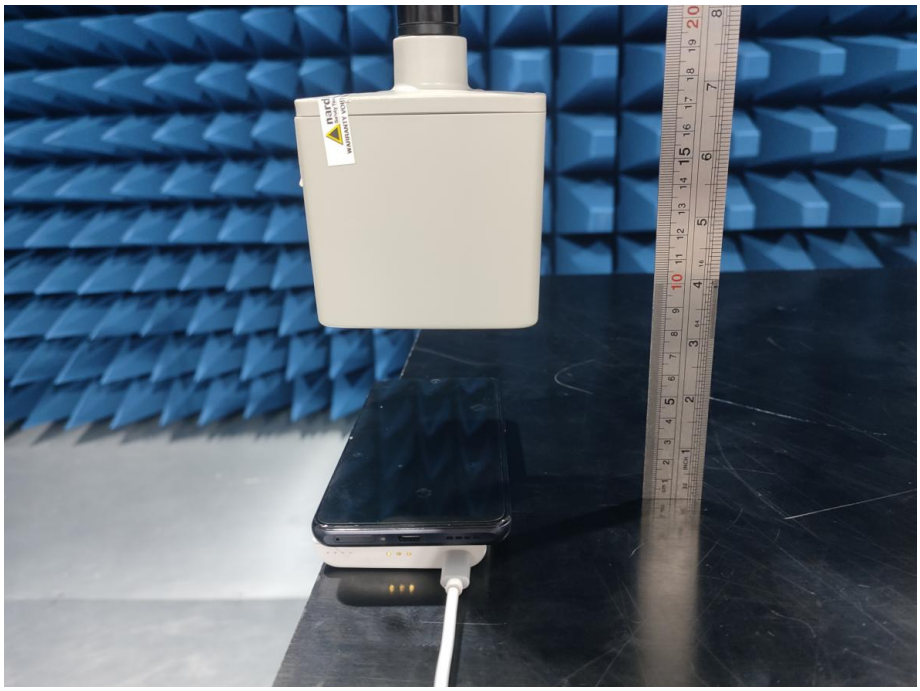


Test Position D（20cm）

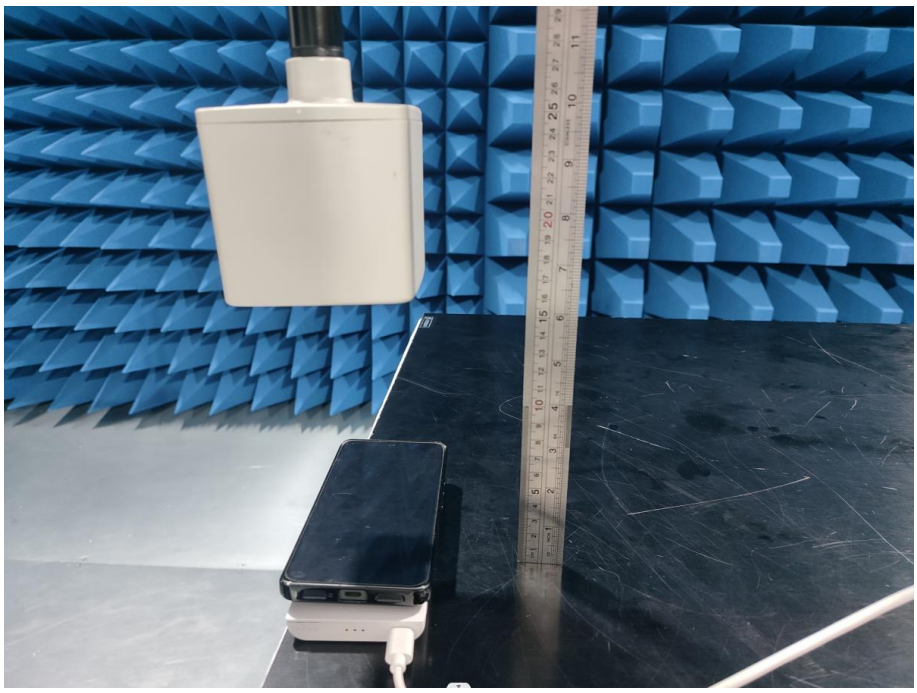


Test Position E（0cm）

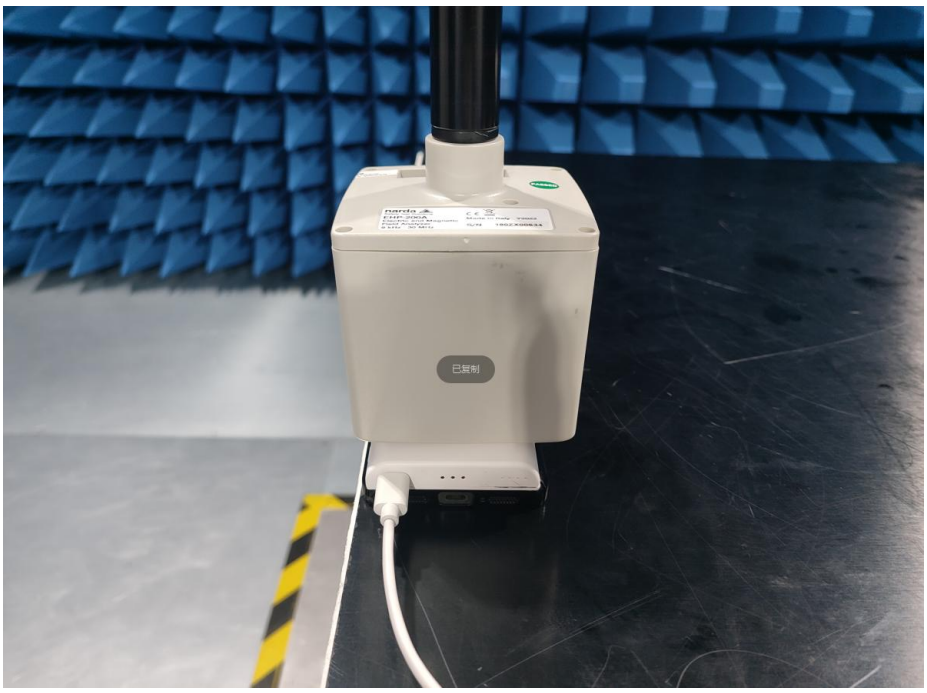
Test Position E（10cm）



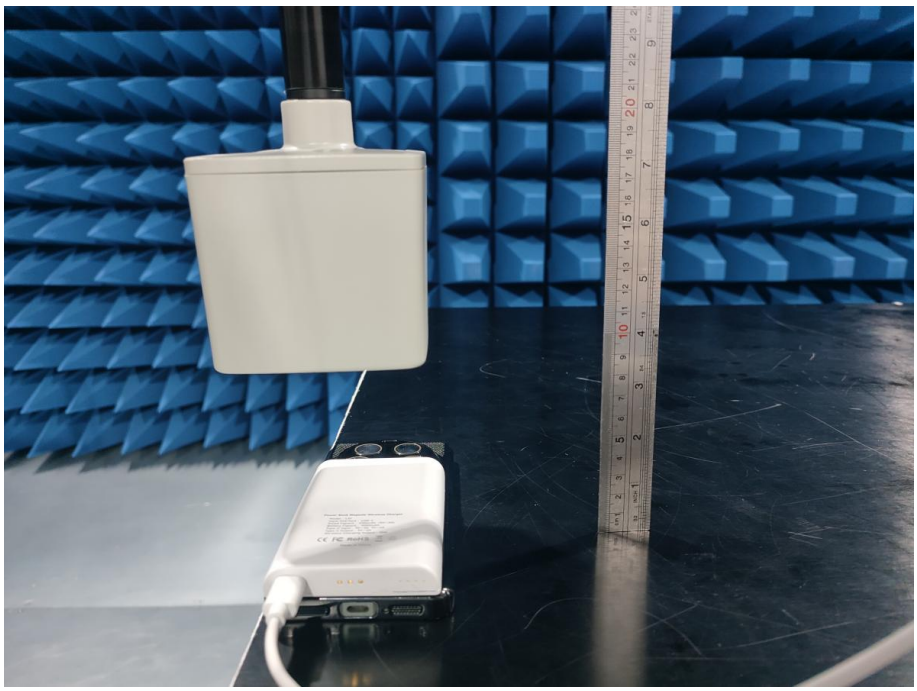
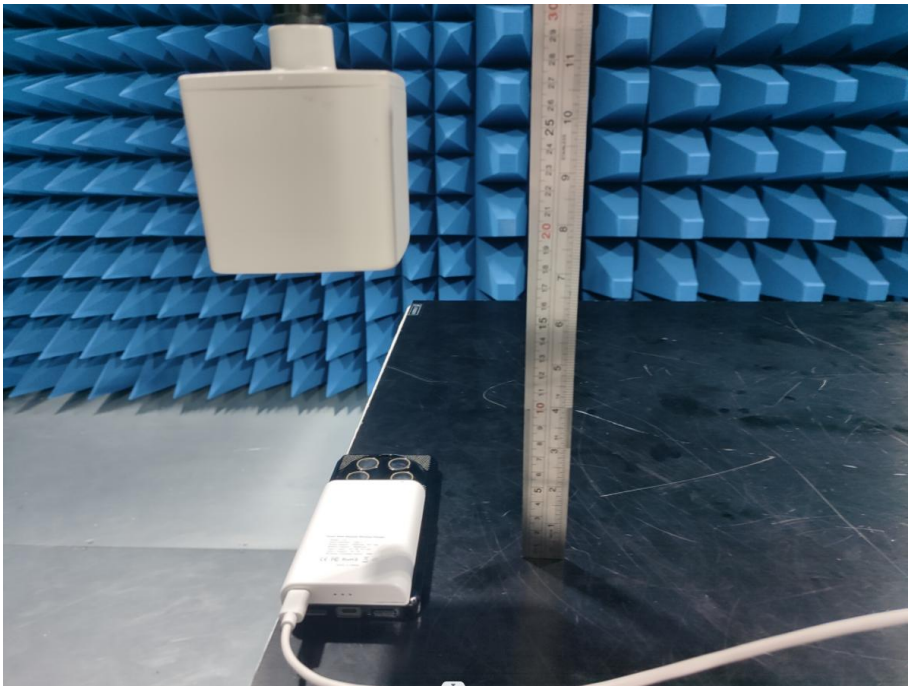
Test Position E（20cm）



Test Position F（0cm）



Test Position F（10cm）



Test Position F（20cm）